WHAT IS CLAIMED IS:

1. A separation column comprising:

a separation channel; and

a separation medium in the channel, said medium comprising a porous matrix, said porous matrix comprising a support and a stationary phase, said support comprising a metal organic photopolymer and said stationary phase comprising a bonded phase.

2. The column of claim 1, wherein the separation medium is fritless.

3. The column of claim 1, wherein the bonded phase comprises an organic functional group.

4. The column of claim1, wherein the separation channel has a channel wall, and the medium is attached to the channel wall and fills at least a section of the channel.

5. The column of claim 1, wherein the porous matrix is homogeneous and contains no chromatographic particles.

6. The column of claim 1, wherein a precursor of the photopolymer comprises a metal alkoxide.

7. The column of claim 6, wherein the metal alkoxide comprises a metal, and the metal is selected from the group consisting of aluminum, barium, antimony, calcium, chromium, copper, erbium, germanium, iron, lead, lithium, phosphorus, potassium, silicon, tantalum, tin, titanium, vanadium, zinc, and zirconium.

8. The column of claim 6, wherein the metal alkoxide comprises at least one photoactive group.

9. The column of claim 1, wherein the porous matrix has an affinity for an analyte.

10. The column of claim 1, wherein the separation medium comprises a homogeneous phase.

11. The column of claim 1, wherein the separation channel is a capillary separation channel or a planar structure.

12. A method of preparing a monolith in a separation column, comprising:

providing a separation column;

introducing a mixture into the column, the mixture comprising a metal organic compound;

irradiating the mixture, causing the mixture to form a solid, porous matrix via photoinitiated polymerization, thereby forming a support in the column; and

introducing a coupling reagent into the column, thereby forming a bonded phase porous matrix in the column.

13. The method of claim 12, wherein the introducing a coupling reagent comprises introducing a coupling reagent comprising a functional group and a metal.

14. The method of claim 13, wherein the metal is selected from the group consisting of aluminum, barium, antimony, calcium, chromium, copper, erbium, germanium, iron, lead, lithium, phosphorus, potassium, silicon, tantalum, tin, titanium, vanadium, zinc, and zirconium.

15. The method of claim 12, wherein the introducing a coupling reagent comprises introducing an organic coupling reagent.

16. The method of claim 12, wherein the introducing a coupling reagent comprises introducing a reagent selected from the group consisting of organochlorosilane, organoalkoxysilane, and organoaminosilane.

17. The method of claim 12, wherein the introducing a coupling reagent comprises introducing a reagent having monofunctionality, difunctionality, or trifunctionality.

18. The method of claim 12, further comprising introducing an organic solvent into the column including the bonded phase porous matrix.

19. The method of claim 12, wherein the porous matrix contains no chromatographic particles.

20. The method of claim 12, wherein the separation medium is fritless.

21. The method of claim 12, wherein the mixture comprises at least one metal organic monomer, at least one porogen, and a photoinitiator.

22. The method of claim 21, wherein the porogen is selected controllably to form pores in the matrix.

23. The method of claim 22, further comprising selecting a molar ratio of monomer to porogen to form pores in the matrix.

24. The method of claim 12, wherein the irradiating comprises irradiating the mixture with visible or ultraviolet light.

25. The method of claim 12, further comprising introducing an organic solvent into the column, the column including the solid, porous matrix.

26. The method of claim 12, wherein the providing comprises providing a capillary or a planar structure.

27. A method of separating a sample of analytes, comprising:

providing a separation column comprising a separation channel and a separation medium in the channel, said medium comprising a porous matrix, said porous matrix comprising a support and a stationary phase, said support comprising a metal organic photopolymer and said stationary phase comprising a bonded phase;

introducing a sample of analytes carried in a solution through the column, wherein the medium concentrates the analytes on the column; and

causing a solution to flow through the column, thereby separating and eluting the analytes.

28. The method of claim 27, wherein the introducing comprises applying a voltage or a pressure to the column.

29. The method of claim 27, wherein the introducing comprises introducing a sample of analytes carried in a first solution through the column, and the causing comprises causing a second solution to flow through the column, wherein the first solution is the same solution as the second solution.

30. The method of claim 27, wherein the introducing comprises introducing a sample of analytes carried in a first solution through the column, wherein the first solution comprises an eluting solvent, and the causing comprises causing a second solution to flow through the column, wherein the second solution comprising the eluting solvent, and a concentration of the eluting solvent in the first solution is less than a concentration of the eluting solvent in the second solution.

31. The method of claim 30, wherein the introducing comprises introducing a sample of analytes having an injection plug length greater than a length of the column.

32. The method of claim 27, wherein the introducing comprises causing sample stacking.

33. The method of claim 27, wherein the providing comprises providing a separation medium comprising a porous matrix without chromatographic particles.

34. The method of claim 27, wherein the providing comprises providing a separation column comprising a capillary or a planar structure.

35. The method of claim 27, wherein the providing comprises providing a fritless separation medium.